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CASE REPORT

Cardiogenic shock in a young female with multiple sclerosis☆

Nir Uriel[a,b,*], **Edo Kaluski**[a,b], **Alberto Hendler**[a,b], **Marina Leitman**[a,b], **Zvi Vered**[a,b]

[a] *Cardiology Department, ICCU, Assaf Harofeh Medical Center, Zerifin, DN Beer Yacov 70300, Israel*
[b] *Sackler School of Medicine, University of Tel-Aviv, Israel*

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Summary A 24-year-old patient with no previous cardiovascular illness or symptoms, was admitted in profound cardiogenic shock related to severe left ventricular systolic dysfunction, accompanied by multiple sclerosis (MS) exacerbation. Initially the patient required mechanical ventilation, inotropic support, and intra-aortic balloon counter-pulsation along with invasive haemodynamic monitoring. Within a few days of high dose corticosteroid therapy patients left ventricular systolic dysfunction returned almost completely to normal, and this was accompanied by dramatic clinical improvement.

We review the current literature on the relation between MS and left ventricular systolic dysfunction and heart failure.

Introduction

Multiple sclerosis (MS) is a chronic inflammatory autoimmune[1] demyelinating disease of the central nervous system typically commencing in early adulthood resulting in progressive, relapsing, multi-focal neurological disability. The course of the disease is highly unpredictable. Cardiovascular disease, symptoms, and manifestations are described infrequently in these patients.

We present a case report of a young female with MS, admitted to the intensive care unit with concomitant MS exacerbation and cardiogenic shock due to severe left ventricular systolic dysfunction. Complete clinical recovery from both cardiogenic shock and left ventricular systolic dysfunction occurred several days later. The association between MS exacerbation and left ventricular dysfunction is reviewed.

Case presentation

A 24-year-old woman, married with one child, was known to suffer from MS for over 6 years. The

Abbreviations: MS, multiple sclerosis; IABP, intra-aortic balloon pump; EDSS, Expanded Disability Status Scale

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* Corresponding author. Tel.: +972 8 9779340/1/5; fax: +972 8 9779342/9.
E-mail address: urielnir@gmail.com (N. Uriel).

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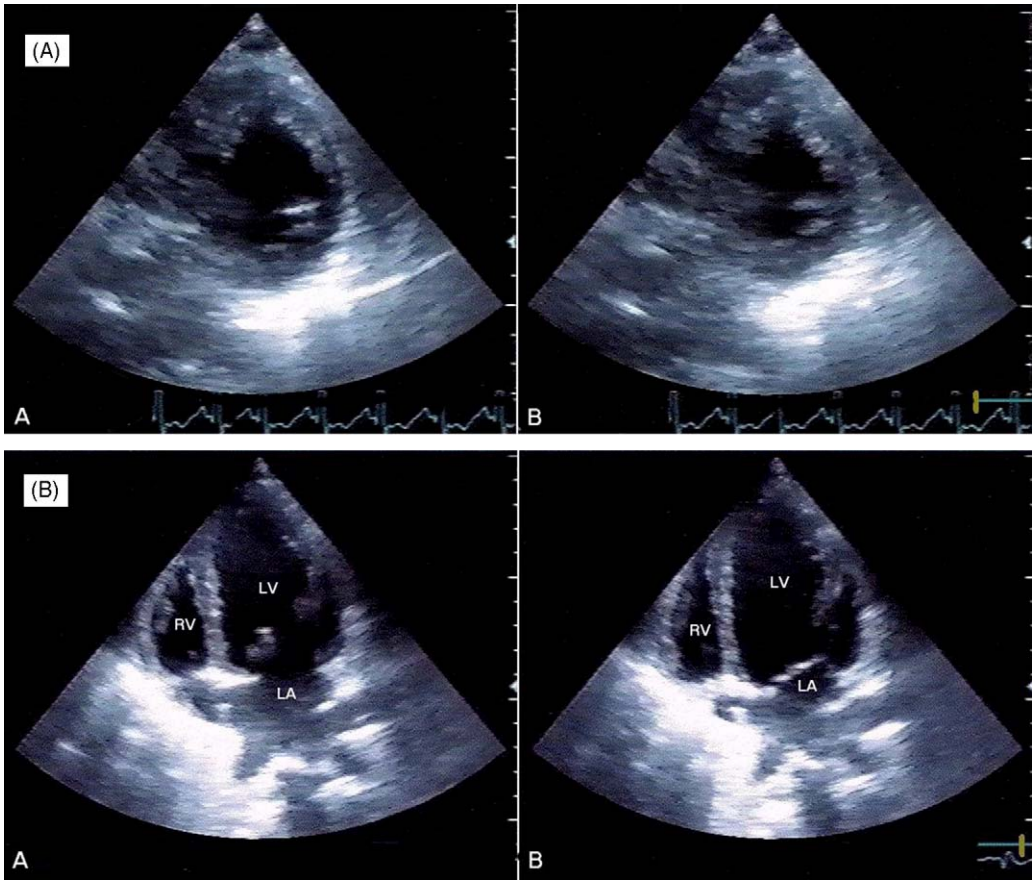

Figure 1 (A) Short axis view of the left ventricle before administration of IV MethylPrednisolone: Lt- diastole; Rt-systole. Left ventricle is dilated and shows little change in the diameter and shape during cardiac cycle. According to the scale in the right side of the pictures left ventricle diastolic diameter is about 5.5 cm. (B) 4-chamber view of the left ventricle before administration of IV MethylPrednisolone: there is almost no change in the size of dilated left ventricle between diastole (Lt) and systole (Rt).

disease had initially been diagnosed due to diplopia and, since then, the patient experienced several relapses that were treated with corticosteroids. The last exacerbation occurred 3 months prior to this hospitalization. The patient had been treated with intra-venous (IV) immunoglobulins every 6 weeks. Her neurological condition during her last follow up was good, with an Expanded Disability Status Scale (EDSS) score of 1.5. The current admission was due to severe dyspnoea without fever or cough. On admission at the emergency department her heart rate was 96 min^{-1}, blood pressure 123/70, oxygen saturation 91% (on room air), and the respiratory rate was 34 min^{-1}. The patient appeared somnolent and sweating profusely. Chest X-ray revealed bilateral alveolar infiltrates. Brain CT demonstrated widening of the third ventricle and lateral horns. Initial treatment included mechanical ventilation and intra-venous fluids. The patient was transferred to intensive care unit, where her condition continued to deteriorate and her blood pressure dropped dramatically. Noradrenaline (norepinephrine) 0.1 mcg/kg/min was started and right heart catheterization was performed (Table 1). Due to the low cardiac output, dobutamine (7 mcg/kg/min) was added. Echocardiography demonstrated severe global left ventricle dysfunction, with an ejection fraction of 15%, without significant right ventricle dysfunction (Figure 1). Blood samples at that time showed elevated WBC counts, decreased total protein and albumin levels, and borderline CPK level of 232 U/l. (Table 2). ECG showed sinus tachycardia and normal conduction without an ''injury pattern''. Serologic tests for Cytomegalovirus, Coxsackie viruses, Echo viruses, Influenza A, B, and Parvo viruses were negative. Urine catecholamines were not elevated. Due to the severe cardiogenic shock and hypotension, an intra-aortic balloon pump (IABP) was inserted and 1:1 counterpulsation began. Broad spectrum antibiotics (ceftriaxone and ciprofloxacin) were added. On the